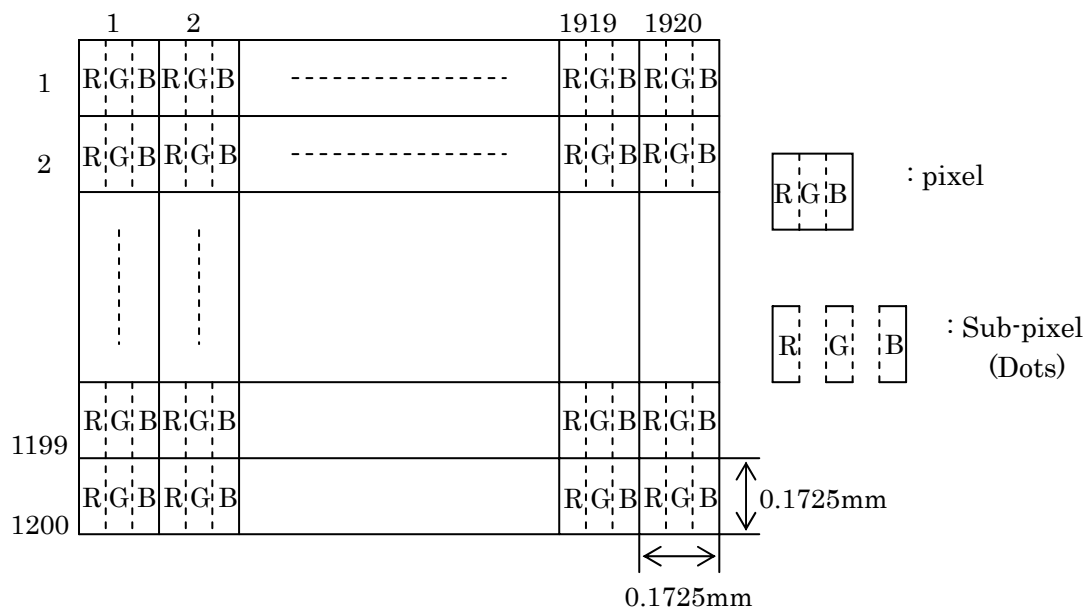


## 1. Product Specifications

### 1.1 General Specifications

Item	Specifications
Display Mode	TN color(64 gray scales, 262,144 colors) Transmissive type, Normally white
Viewing Direction	6 o'clock (in direction of maximum contrast)
Driving Method	TFT active matrix
Input Signals	LVDS interface RxOCLK+, RxOCLK-, RxECLK+, RxECLK- RxOIN0+, RxOIN0-, RxEIN0+, RxEIN0-, RxOIN1+, RxOIN1-, RxEIN1+, RxEIN1- RxOIN2+, RxOIN2-, RxEIN2+, RxEIN2-
Display Area	331.2 (W) × 207.0 (H) (mm)
Bezel Opening	335.0 (W) × 210.7 (H) (mm)
Number of Pixels	1920 (W) × 1200 (H) <sup>1)</sup>
Pixel Pitch	0.1725 (W) × 0.1725 (H) (mm) <sup>1)</sup>
Pixel Arrangement	RGB vertical stripes <sup>1)</sup>
Surface Treatment	Anti-Reflection and hard coat 3H on LCD surface
Backlight	Single cold-cathode fluorescent lamp for sidelighting
Dimensional Outline	344.5max. (W) × 222.5max. (H) × 6.5max. (D) (mm)
Inverter	SMBus Controlled for Brightness
EDID	SPWG Version 2.0, (2001-9-4)
E <sup>2</sup> ROM Data Address	A0h

Note 1)



### 1.2 Mechanical Specifications

#### 1.2.1 Weight

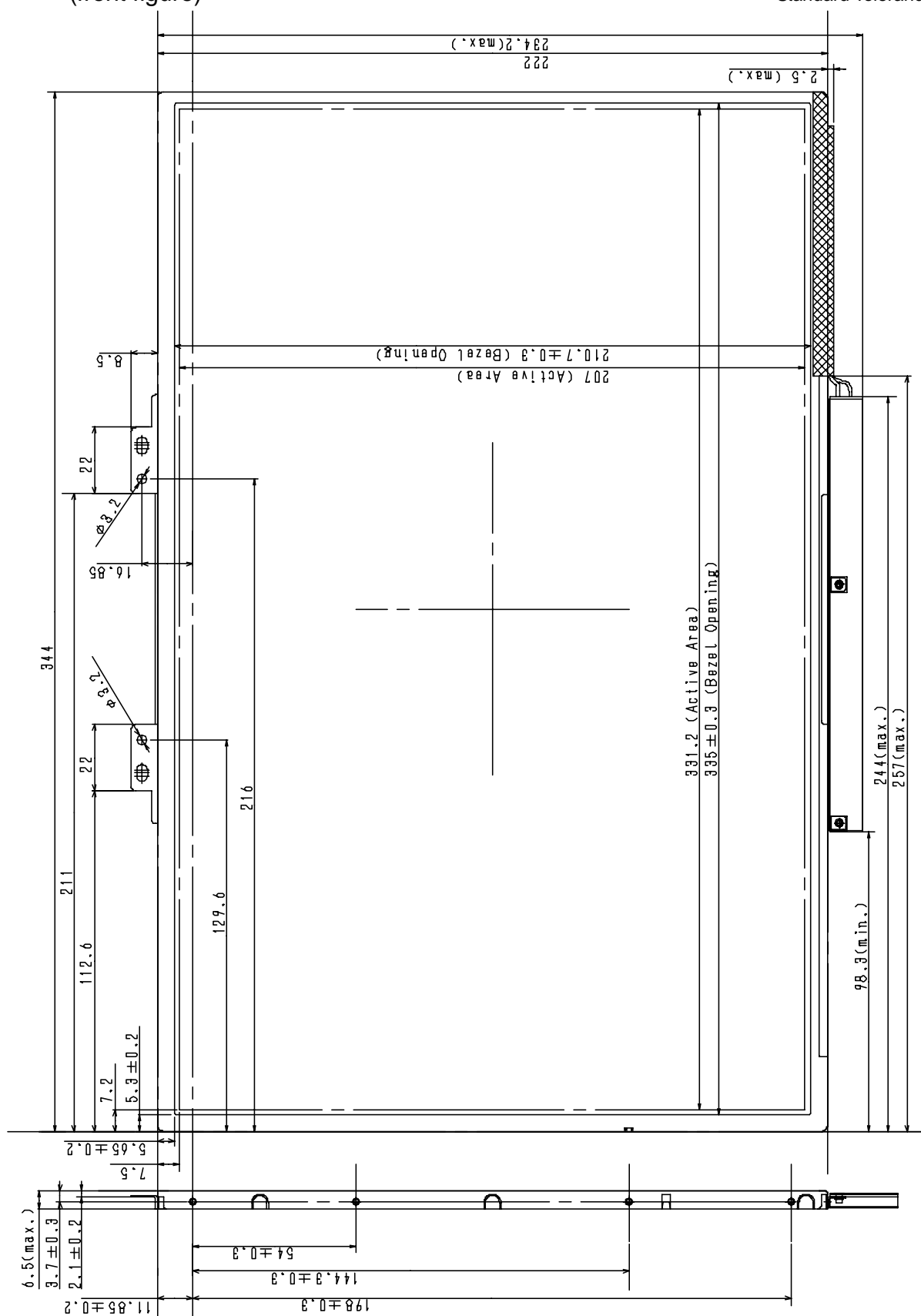
LCD Module : 600g (Max.)

\* Without Inverter

### 1.2.2 Dimensional Outline (front figure)

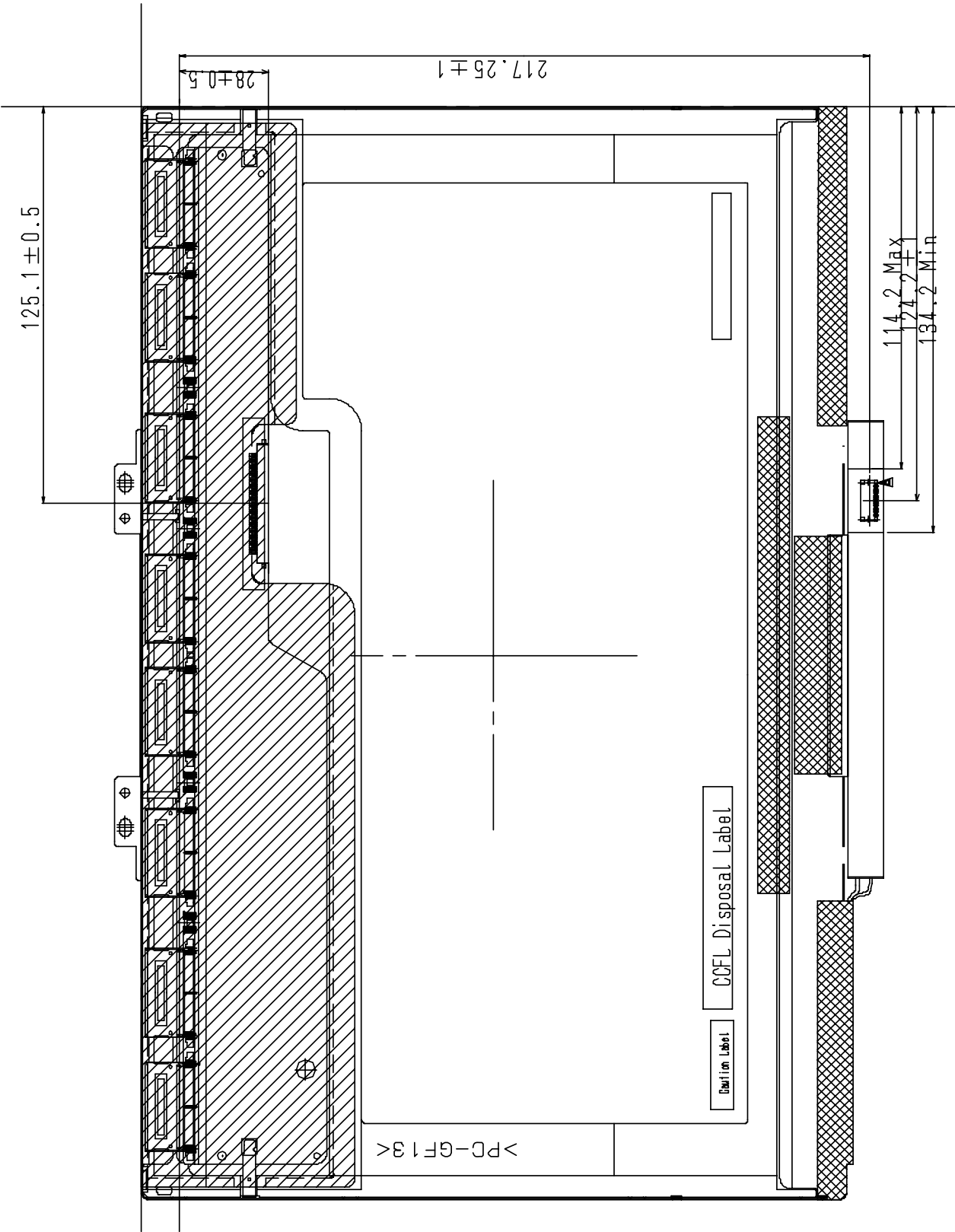
Unit : mm

Standard Tolerance:  $\pm 0.5$



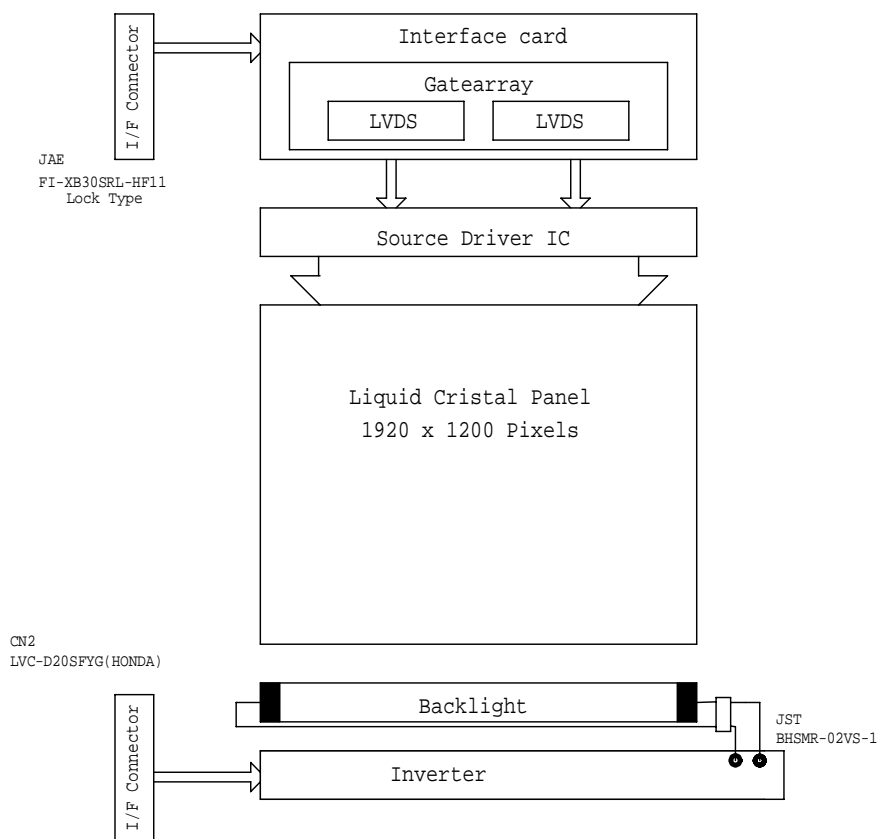
(back figure)

Standard Tolerance:  $\pm 0.5$   
Unit : mm

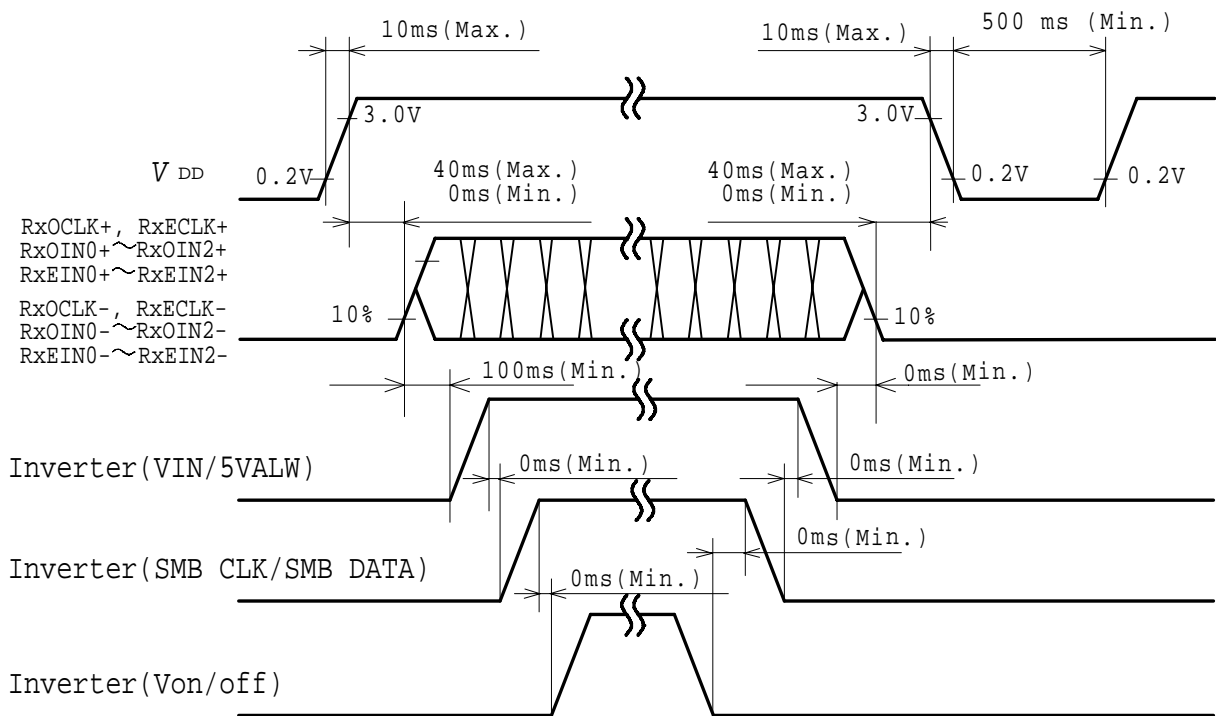


1.3 Electrical Specifications

1.3.1 Circuit Diagram

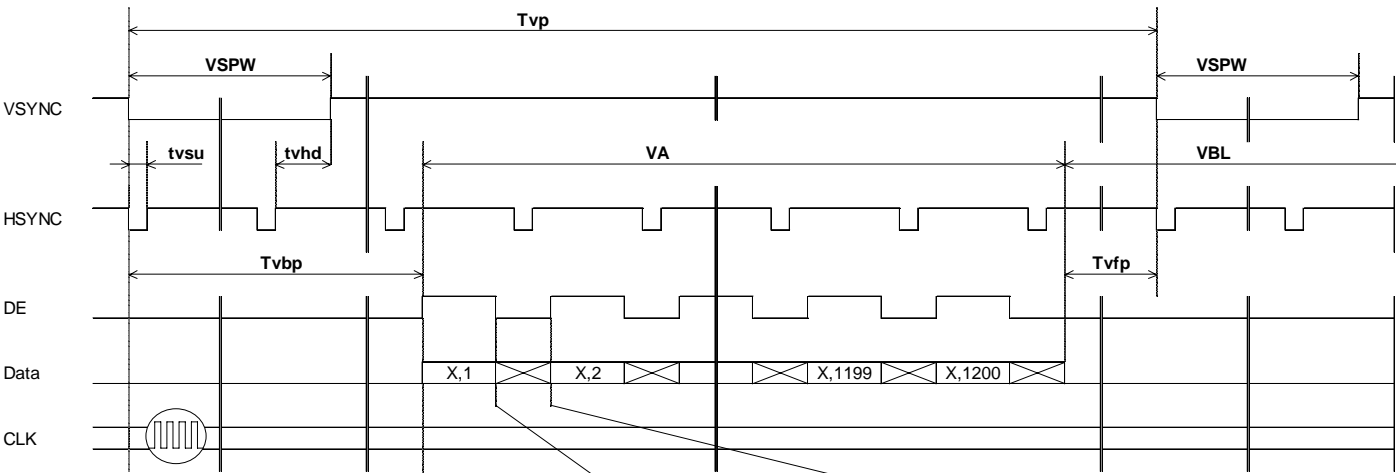


1.3. Sequence of Power Supplies and Signals

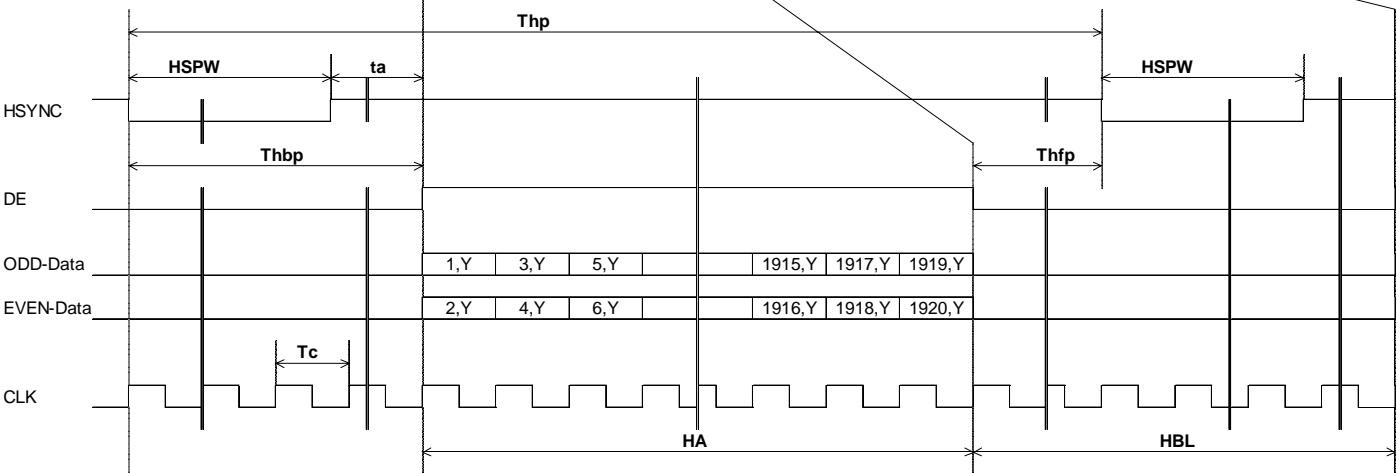


1.3.3 Timing Chart

(1) Vertical Timing



(2) Horizontal Timing



1.3.4 Timing Specifications <sup>1) 2) 3) 4) 5) 6) 7)</sup>

Item	Symbol	min.	typ.	max.	unit
Horizontal Scanning Term	$Thp$	-	1024	-	$Tc$
		-	13.50	-	us
H-sync Pulse Width <sup>*8)</sup>	$HSPW$	4	-	136	$Tc$
Horizontal Front Porch	$thfp$	4	-	136	$Tc$
Horizontal Back Porch <sup>*8)</sup>	$Thbp$	16	-	-	$Tc$
Horizontal Sync Term	$ta$	4	-	-	$Tc$
Horizontal Blanking Term	$HBL$	-	64	-	$Tc$
Horizontal Display Term	$HA$	960	960	960	$Tc$
Frame Period	$Tvp$	-	1235	-	$Thp$
		-	16.67	16.67	ms
V-sync Pulse Width	$VSPW$	1	-	-	$Thp$
V-sync Set Up Time (to H-sync)	$tv_{su}$	8	-	-	$Tc$
V-sync Hold Time	$tv_{hd}$	8	-	-	$Tc$
Vertical Front Porch	$tv_{fp}$	8	-	-	$Tc$
Vertical Back Porch <sup>*8)</sup>	$Tv_{bp}$	4	-	-	$Tc$
Vertical Blanking Term	$VBL$	-	35	-	$Thp$
Vertical Display Term	$VA$	1200	1200	1200	$Thp$
DE Pulse Width	$HA$	960	960	960	$Tc$
Clock Period	$Tc$	13.179	13.179	-	ns

Note 1) Refer to "Timing Chart" and LVDS (DS90CF366) specifications by National Semiconductor Co., Ltd.

Note 2) If ENAB is fixed to "H" or "L" level for certain period while NCLK is supplied, the panel displays black with some flicker.

Note 3) If NCLK is fixed to "H" or "L" level for certain period while ENAB is supplied, the panel may be damaged.

Note 4) Please adjust LCD operating signal timing and FL driving frequency, to optimize the display quality.

There is a possibility that flicker is observed by the interference of LCD operating signal timing and FL driving condition (especially driving frequency), even if the condition satisfies above timing specifications and recommended operating conditions shown in 3.

Note5) Do not make  $tv$ ,  $tv_{dh}$  and  $tv_{ds}$  fluctuate.

If  $tv$ ,  $tv_{dh}$ , and  $tv_{ds}$  are fluctuate, the panel displays black.

Note6) In case of using the long frame period, the deterioration of display quality, noise etc. may be occurred.

Note7) NCLK count of each Horizontal Scanning Time should be always the same.

V-Blanking period should be " $n$ " X "Horizontal Scanning Time". ( $n$ : integer)

Frame period should be always the same.

Note 8) Please keep below equations.

$$VBL = Tv_{fp} + Tv_{bp}$$

$$HSPW = HBL - Thfp - ta$$

$$Thbp = HSPW + ta$$

1.3.5 Interface Connector <sup>1)</sup>

CN1 INPUT SIGNAL (FI-XB30SRL-HF11 / JAE)

[ Mating Connector :Wire Type FI-X30H(Housing), FI-XC3-1-15000(Contact)

FPC Type FI-X30M or FI-X30MR, Coax Type FI-X30C or FI-X30C2(Housing), FI-X30CH-7000(Shell)]

Terminal No.	Symbol	Function
1	V <sub>SS</sub>	GND
2	V <sub>DD</sub>	POWER SUPPLY : +3.3V
3	V <sub>DD</sub>	POWER SUPPLY : +3.3V
4	V <sub>EDID</sub>	DDC 3.3V POWER SUPPLY : +3.3V
5	TEST	Panel BIST Enable
6	CLK <sub>EDID</sub>	DDC Clock
7	DATA <sub>EDID</sub>	DDC Data
8	RxOIN0-	Negative LVDS differential data input (Odd), [R0-R5, G0]
9	RxOIN0+	Positive LVDS differential data input (Odd), [R0-R5, G0]
10	V <sub>SS</sub>	GND
11	RxOIN1-	Negative LVDS differential data input (Odd), [G1-G5, B0-B1]
12	RxOIN1+	Positive LVDS differential data input (Odd), [G1-G5, B0-B1]
13	V <sub>SS</sub>	GND
14	RxOIN2-	Negative LVDS differential data input (Odd), [B2-B5, HS, VS, DE]
15	RxOIN2+	Positive LVDS differential data input (Odd), [B2-B5, HS, VS, DE]
16	V <sub>SS</sub>	GND
17	RxOCLKIN-	Negative LVDS differential clock input (Odd)
18	RxOCLKIN+	Positive LVDS differential clock input (Odd)
19	V <sub>SS</sub>	GND
20	RxEIN0-	Negative LVDS differential data input (Even), [R0-R5, G0]
21	RxEIN0+	Positive LVDS differential data input (Even), [R0-R5, G0]
22	V <sub>SS</sub>	GND
23	RxEIN1-	Negative LVDS differential data input (Even), [G1-G5, B0-B1]
24	RxEIN1+	Positive LVDS differential data input (Even), [G1-G5, B0-B1]
25	V <sub>SS</sub>	GND
26	RxEIN2-	Negative LVDS differential data input (Even), [B2-B5, HS, VS, DE]
27	RxEIN2+	Positive LVDS differential data input (Even), [B2-B5, HS, VS, DE]
28	V <sub>SS</sub>	GND
29	RxECLKIN-	Negative LVDS differential clock input (Even)
30	RxECLKIN+	Positive LVDS differential clock input (Even)

CN2 INVERTER INPUT SIGNAL (LVC-D20SFYG / HONDA)

Terminal No.	Symbol	Function
1	V <sub>IN</sub>	Supply Voltage : 9V~21V
2	V <sub>IN</sub>	Supply Voltage : 9V~21V
3	V <sub>IN</sub>	Supply Voltage : 9V~21V
4	NC	Non connection
5	GND	GND
6	NC	Non connection
7	5VALW	Power Source for SMBus : 4.85V~5.2V
8	GND	GND
9	SMB_DATA	SMBus interface for sending brightness information (Data pin)
10	SMB_CLK	SMBus interface for sending brightness information (Clock pin)
11	GND	GND
12	V <sub>ON/OFF</sub>	Backlight ON/OFF control signal (1-ON, 0-OFF)
13	GND	GND
14	LAMP_STATUS	FL status, ON/OFF
15	NC	Non connection
16	NC	Non connection
17	NC	Non connection
18	NC	Non connection
19	NC	Non connection
20	NC	Non connection

Note 1) Please connect NC pin to nothing. Don't connect it to grand nor to other signal input.

Please connect GND to ground. Don't use it as no-connect nor connection with high impedance.

Note 2) 262,144 colors are displayed by the combinations of 18 bits data.